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Assessment of response type preference and subsequent events influence of students with Attention Deficit Hyperactivity Disorder (ADHD)

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Abstract

The basic step in determining how to teach children with Attention Deficit Hyperactivity Disorder (ADHD) is to assess the learning style preferences in different areas. Subject tasks usually require different types of response either verbal or motor. The study investigates the response type preferences and subsequent events in the learning style of ADHD. The notion about ADHD preferences of motor and verbal-motor response type, as well as verbal and physical approval preferences is confirmed. The complete analysis of this type is conducted to help design instructional programs and IEP for students with extreme executive function deficit like ADHD children.

Keywords: Attention Deficit Hyperactivity Disorder (ADHD), learning style, subsequent events, response type;

1. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a condition that becomes apparent in children during the preschool and early school years. The disorder is currently defined as a cognitive-behavioral developmental condition where the complete clinical symptoms are behavioral. Most authors explain that it is hard for those children to control their behavior and to pay attention when given a task. The modern researchers express little doubt whether that poor behavioral inhibition plays a central role in ADHD (see Barkley, 1997, 2011). The problem with disinhibition, according to many authors, comes along with the core deficit of Executive Functions Deficit. Banich (2009) defined the executive function as "the set of abilities required to effortfully guide behavior towards a goal, especially in non-routine situations". According to Banich various functions are thought to fall under the rubric of executive function. The author underlines that these include prioritizing and sequencing behavior, inhibiting familiar and stereotyped behaviors, creating and maintaining an idea of what task or information is most relevant for current purposes (Banich, 2009; Persico & Pozzi, 2011).

Further, Banich notice that often it is referred to as an attentional or mental set. It is "providing resistance to information that is distracting or task irrelevant, switching behavior task goals, utilizing relevant information in

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support of decision making, categorizing or otherwise abstracting common elements across items, and handling novel information or situations. As can be seen from this list, the functions that fall under the category of executive function are indeed wide ranging". (p.89; Banich, 2009). In our case, those executive function deficits will interfere with the preferred response type.

The disorder affects between 2%-12% of all children attending school. Also it is observed that in a classroom of 25-30 children it observed at least one will have ADHD. In other words, we can conclude that in any regular class there is one child with hyperactivity syndrome. Some children with ADHD have difficulty studying a particular subject in school because they perceive it as boring. Other hyperactive children have specific deficits in skills required for that task. Some of them do have type of learning disabilities (LD). These children present particular challenge, not only for assessment but for classroom intervention (American Academy of Pediatrics, 2000)

Expectancy factors, stimulus events, response type and subsequent events have to be considered in relation to one another in planning lesson instruction. It is necessary to take into account all the factors together to design instructional strategies that best facilitate learning of ADHD children.

There are two main processes involved in approaching teaching practice for ADHD children. The first is connected with the question what to teach or it is the process when the teacher determines the instructional need of the ADHD student by applying specifying assessments of what to teach. That is the traditional point of view and it is not the focus of our investigation. The second process focuses on environmental variability that influences the students' achievements.

Assessment of learning style is one of the interesting questions for educators, psychologists and other child developmental specialists. It becomes excessively important when it is related to children with Attention Deficit Hyperactivity Disorder (ADHD). Special educators face the problem how a child with ADHD learns. Another vital question is in what way ADHD children learn the new material best. Another problem related to that question is what is the preferred modality used by hyperactive children.

We found in Mercer and Mercer (1989) a description of the basic goal of assessment practices. Mercer and Mercer (1989) use one statement of Algozine (in Mercer and Mercer, 1989, pp. 38):

"The ultimate goal of assessment is improvement of instruction for the learner. The only valid special education process is one in which assessment leads to treatments that have known outcomes. Frankly, a good share of assessment activities today consists of meddling… To the extent that collection of assessment data leads to improvements in instruction, collection of those data is a reasonable activity" (in Mercer and Mercer, 1989, pp. 38).

Mercer and Mercer (1989) argue that in order to aid instructional programming, the assessment must provide information in two areas. The first important part is the application of instruments that helps teacher to select what to teach the individual student. The second approach is to help the teacher determine how to teach the student in order to achieve maximum progress. The author states that when the teacher has determined how the student learns best, she or he can arrange variables such as physical setup of the class, social interaction patterns, and reinforcement strategies to make the instructional program most effective (Mercer and Mercer, 1989; Alkharusi, 2010).

2. Purpose of the Study

Working with ADHD children requires a lot of patience and knowledge about the specificity of the disorder. Selecting the type of response for an instructional activity can be crucial in designing instruction for the child with ADHD. The teachers of hyperactive children should also consider the following factors timing, amount, and ratio of reinforcement (Mercer and Mercer, 1989). Children with ADHD require immediate reinforcement to maintain their destructive behavior. They could not tolerate a delay in reinforcement without decreasing the occurrence of the destructive behavior. ADHD students require a great deal of reinforcement only for certain changes. Very often

when the teacher attempts is establishing a new behavior, he or she needs to give much reinforcement to the ADHD student (Mercer and Mercer, 1989, Barkley, 1997; Hussein, 2010).

In that context, the aim of the research is assessing the response type and the subsequent events that are ADHD children specific. Our basis notion is that ADHD children are strongly dependent on the subsequent events in terms of their response type when learning that is with the connection of their executive function deficit described above. That notion raises several hypotheses on verbal, verbal-motor, verbal prize and physical approval response types.

2.1. Research Hypotheses and Objectives

Four hypotheses on the response type preferences of ADHD children are presented: 1) It is hypothesized that children with ADHD will show significantly higher results on preference of Verbal response type in comparison to same age peers; 2) It is hypothesized that children with ADHD will show significantly higher results on preference of Verbal-Motor response type in comparison with same age peers; 3) It is hypothesized that children with ADHD will show significantly higher results on preference of Verbal Praise in comparison with the controls; 4) It is hypothesized that children with ADHD will show significantly higher results on preference of Physical Approval in comparison with the controls.

The present hypothesis require us to follow some basic research objectives: 1) To formulate experimental group of 30 children with ADHD attending second and third grade and same age controls; 2) To choose appropriate method for assessment of learning style of response type and subsequent events; 3) To make qualitative and quantitative analyze of the results.

2.2. Method

We choose to apply the method used by Mercer and Mercer (1989) - a test for Analysis of Student Learning Form-Response Type and Subsequent Events. The test is published in the book “Teaching Children with Learning Problems“. The Response Type Assessment contains 3 sub-skills: 1)Verbal response type consists of 5 items, ranged from 0 to 3; 2) Verbal- Motor response type consists of 5 items, ranged from 0 to 3; 3) Motor response type consists of 19 items, ranged from 0 to 3. The maximum result for Response type assessment is 87 points. The Subsequent Events Assessment contains three sub-items: 1) Verbal Prize contains 4 items ranges from 0 to 3; 2) Physical Approval contains 4 items ranges from 0 to 3; 3) Evolutional Events contains 11 items ranged from 0 to 3. The maximum result for Subsequent Events assessment is 57 points.

2.3. Procedure

Each child is tested by the regular class teacher. The observer gives the teacher the questionnaire form and gives him/her the following instructions:

Please, read carefully the given statements about student learning style preferences related to the response type and subsequent events (see Mercer and Mercer, 1989). Circle the number that most correctly corresponds to level of presence of the given statement. Three is no wrong or correct answer. Please, use the presented table above for assessing the child response type.

The terms used are (Key): 3-Always happens; 2-Frequently happens; 1-Sometimes happens; 0-Never happens. The maximum result for Response type assessment is 87 points. The maximum result for the subcategory verbal response type is 15 points. The maximum result for the verbal-motor response type is also 15 points. The maximum

result for Subsequent Events Assessment is 57 points. The maximum result for the subcategory verbal prize is 12 points. The maximum result for the subcategory physical approval is also 12 points.

2.4. Participants

We investigate two groups of children: 1) experimental group of children with ADHD, which consists of thirty boys and girls at second and third grade in regular schools 2) thirty controls-boys and girls without learning and behavioral problems at the same age. All of the children are pupils in main stream schools. The children were previously diagnosed by expert team that consists of a neurologist, a special educator, and a psychologist for having the diagnosis ADHD.

3. Findings and Results

Figure 1 graphically represents the comparison between the mean results of the two groups on verbal response type preferences. There is a statistically significant difference between ADHD and the controls.

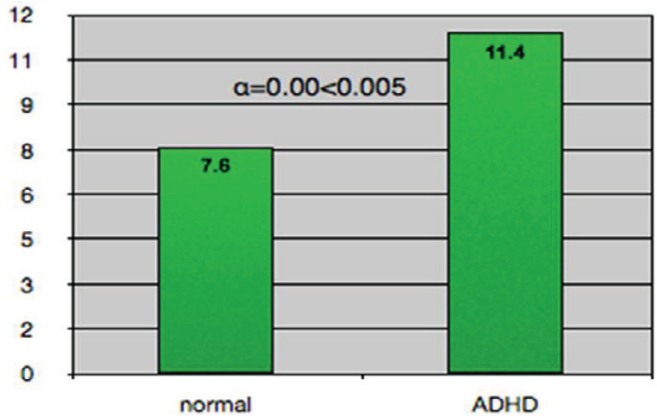
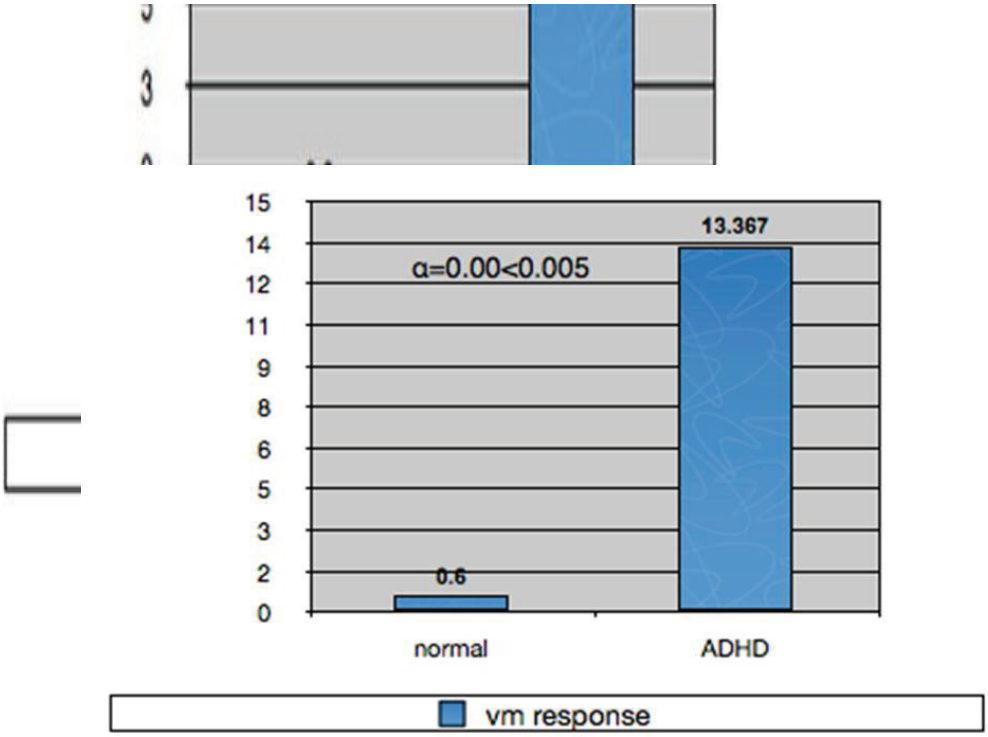


Figure 1. Verbal Response Type

The results prove our first hypothesis that children with ADHD will show statistically higher results on the verbal response subtype. The learning style assessment measures the response type of students and our hypothesis argue about high relation between subsequent events and the response type. The statistical method proves partially our basic notion and our first hypothesis are completely confirmed.

Figure 2 graphically represents the single case representation in controls. The number of investigated children is not large, so that method could be applied for verification of consistence of true case answers.



It could be clearly seen that there is a statistically significant difference between the two groups. Children with ADHD show higher result on the verbal motor response items.

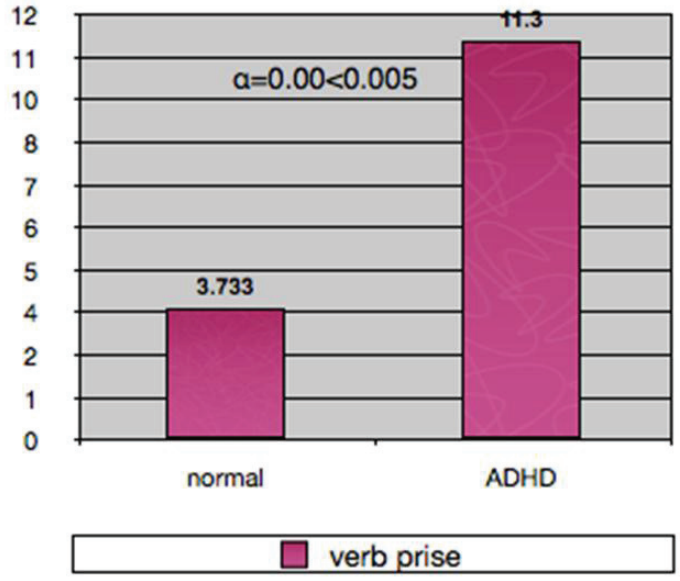


Figure 3. Verbal Prise Response

Figure 3 represents the statistically significant difference between the results of the two groups. Children with ADHD show significantly higher results on the response type answers. The method we applied confirmed our third hypothesis that children with ADHD will have higher score results on verbal praise response. The difference between the ADHD and controls will be further discussed in the next chapter.

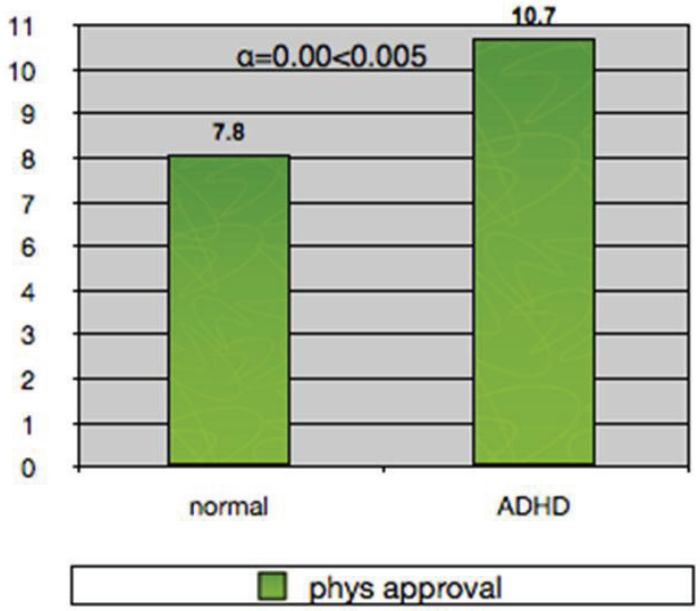


Figure 4. Physical Approval

Figure 4 graphically represents the mean results of the two groups. Children with ADHD have statistically lower result which confirms our assumption about significant relation between physical approval and type of the response. Further discussion will be presented below.

4. Conclusions and Recommendations

Most academic tasks usually require students to make a motor or verbal response, or both. Children with ADHD talk excessively and have a hyperactive motor activity. Selecting the type of the response for an instructional activity can be crucial in designing instruction for a student. Children with ADHD prefer extensive motor involvement. They like pushing buttons, operating tape recorder, arranging items on felt board. It was interesting to find that the teachers of those children defend them as preferred to give simple answers-like yes, or no. That is interesting because by definition ADHD children talk excessively. Our explanation is that children with ADHD talk too much only in free talks, but when the question is structured and requires a well-structured answer, the child is confused and prefers the simple answer.

Also, the speed of response is under discussion. When choosing the instructional strategies and defining the teaching style we should have in mind that children with ADHD talk rapidly without thinking which topic is much important. Our research makes it clear that most ADHD children prefer simple one-word responses, for example

answering by short simple sentences. Those children prefer brief discussions because they could not follow the topic and the discourse for a long time and do not have the patience. They do not like extensive dialogue and always prefer fast responses.

Very often ADHD children verbalize their response while touching the item they want to refer to. Another specific feature for those children is their preferences for operate hardware while verbalizing. When writing the answer the hyperactive children self-instruct it and verbalize all thoughts when working. It was discovered that in class most ADHD children sing and clap their hands. Moreover teachers' reports show that ADHD children like playing with hand puppets. Of course, all these types of behaviours are observed in normal children but empirical data show that they are statistically significantly more often performed in the ADHD group. Those discoveries confirm our first and second hypotheses, which claim that children with ADHD show statistically higher results on verbal and verbal-motor response type.

Additionally, we found the specific motor type responses in those children which were not included in our hypotheses mentioned above. For example we found that ADHD children like responding by pointing to an object. But they could not operate well enough with manuscript writing. They do not use the cursive writing with all the type but change it indefinitely with capital letters. They have no problem writing numbers but find difficulties tracing labyrinths, points, and thoughts. When coping (rewriting) texts, those children make it from a near position that could be explained by their difficulties in attention, more specific-in concentration. When working, ADHD children prefer using gross motor skills. Those children do not need the use of pencil holder. Most of them write quickly and sloppily and too big in the space allowed take too much space on the paper. In addition some of them have speech problems.

The third and fourth hypotheses are connected with the subsequent events in children with ADHD. We hypothesized that ADHD children will show statistically significant higher results on verbal prize and physical approval. It is clear that consequences greatly influence behaviour, especially in ADHD children. They are redundant to stimulus and praises and to all kind external events. Many authors are anonymous those consequences motivate students and that consequences can manage the children's behaviour. Social praise, special activities and privileges, evaluation marks, positive physical expression, awards, tokens, and tangible objects are some of the positive consequences. They are frequently used by teachers to reinforce and therefore to influence the student behaviour.

The teachers have many ways of finding out what reinforces a student. But that is sometimes difficult to formulate for ADHD students. The teachers can simply ask the student, or note free-time preferences for activities or objects. Good practice teachers use a reinforcement "menu", featuring a variety of consequences from which a student chooses her favourite when working with ADHD.

To use consequent events most effectively, the teachers must consider timing, amount, and ratio of reinforcement. Some students need immediate reinforcement to maintain behaviour; others can tolerate a delay in reinforcement without decreasing the occurrence of the behaviour. Some students require a great deal of reinforcement only for certain changes. For instance, when the teacher attempts establishing a new behaviour model more reinforcement may be needed. The latter is especially true when working with ADHD students. We found that ADHD children like all kind of praises in accordance to their teachers' answers. ADHD children like one-word praises, phrase - praises and humour. At the same time they do not like extensive talk praises.

As to the next point-physical approval, we found that ADHD children like all of the described approvals; smiles, gestures of approval, like thumbs up, wink, touching, hugging, handshaking etc. Moreover our research discovered several evaluation events that are preferred by ADHD children, yet we did not include in our research hypotheses. All ADHD children were found to like the immediate feedback. All of them have problems feedback on incorrect response from the teachers and their peers as well as from the materials. ADHD children need sensitive feedback when the answer is incorrect. All of those children like words like happy games, stars, checks, number

correct, letter grate, rubber stump. They also like token reword like points, chips, and tickets. The other kinds of items that are preferred from ADHD children are candies, cookies, toys, cards, happy games.

As conclusions could be summarized several statements: 1) Children with ADHD prefer short response types related to one-word response, simple sentences and brief discussion. In comparison with the controls, ADHD children prefer short answers and instructions when they explain purposeful answers; 2) Children with ADHD prefer combination between verbal and motor activity in response type. In comparison with the controls, hyperactive children prefer in a grate extend touching, operating, talking, singing and clapping with hand as a response; 3) Children with ADHD prefer verbal praises that is funny or short in comparison with the controls; 4) Children with ADHD like more physical approvals than controls. They prefer smiles and gestures, touching, hugging and handshaking.

Such kinds of discoveries can be of great importance for the educational practice and therapy for all that work with ADHD children. The results could be used by regular class teachers who best fit their style of teaching those children. The results are also important for special educator or speech-language pathologists who need to know how to praise and reinforced hyperactive patients and how to extract the very best from them. Last but not least, the results are important for the families of ADHD children.

The research has several limitations. Further research is needed in order to fully describe the learning style of ADHD children. We need to apply the method on more children for that population in order to receive general and official conclusions.

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